# A1 Housing Bassetlaw Ltd

**Robert Ebbs & Keith Brown**

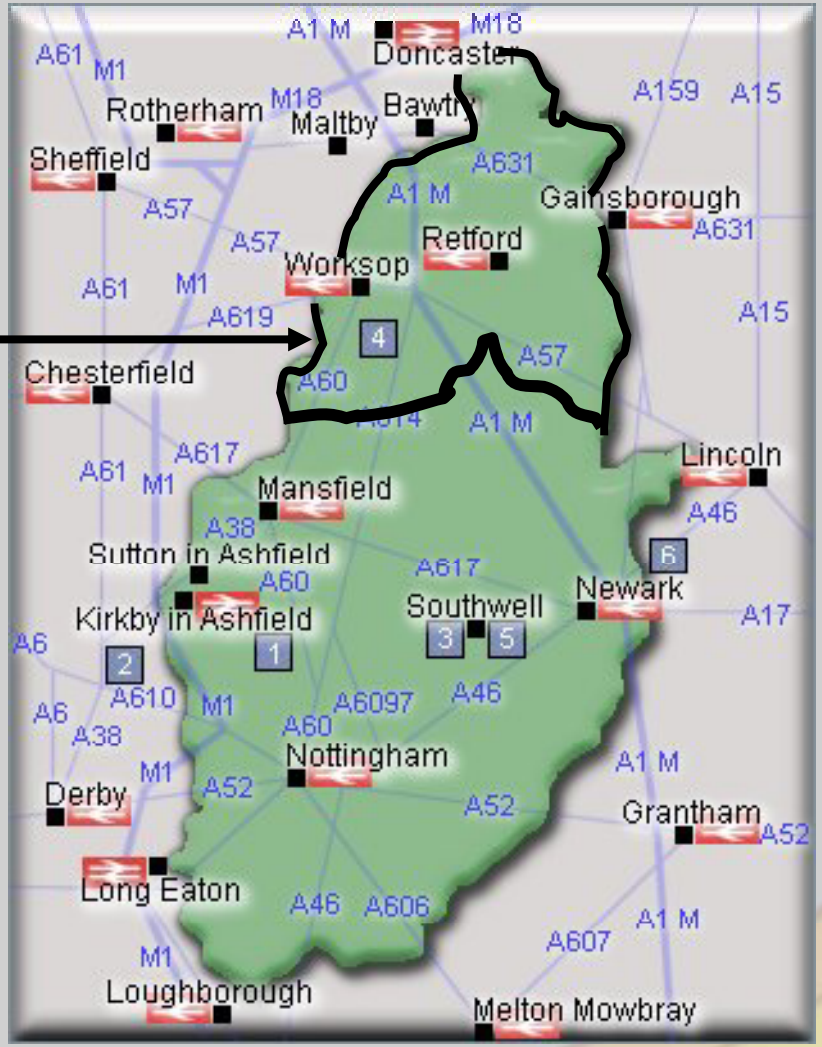
HOUSING

*Providing Quality Homes and Neighbourhoods*

# A1 HOUSING LTD

## Where are we?

BASSETLAW DISTRICT

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# Our Customer Poverty Related Demographic

Households with children are predominant amongst low income households.

9% are one parent households

57% of our tenants are over 60, 63% are retired.

63% of our tenants have a household member who has a long standing illness, disability or infirmity

Only 18% are employed (one third of which claim working tax credits).

17% have a net income of less than £100 per week

70% have a net income of less than £200 per week

27% are in receipt of income support

30% receive disability living/ attendance allowance.

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## Fuel Poverty

**Definition:**

*Someone who spends more than 10% of their income on keeping themselves warm.*

Fuel poverty is not **just** about low incomes. It is part of a complex picture, linked to:

- multiple deprivation;
- unaffordable fuel prices;
- poor housing stock characterised by inadequate insulation and inefficient heating systems.

Most vulnerable are older people particular those living on their own, lone parents, disabled people and families where adult members are either unemployed or have a low income.

***To address this problem we began to look towards alternative sources of affordable energy…..***

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# **Fuel Poverty**


25 million homes in the UK

More than 20% in social housing and growing

3.5 million people are in fuel poverty and growing

2.5 million people live in one room in the winter months

25,000 deaths each year due to cold related illnesses

B.R.E. evidence to show that there is a direct link of poorly heated homes and demand on hospital beds, particular in winter.

WE HAVE TO DO MORE

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# How do we combat Fuel Poverty?

BY CARRYING OUT A “WHOLE PACKAGE” APPROACH OF PHYSICAL, ENVIRONMENTAL AND SOCIAL ENDEAVOURS

- Hard to heat
- Wasting fuel
- Bad habits
- Insufficient income
- Insulate
- Efficient appliances
- Good advice
- Money Advice
- Social Bank & Credit Union
- Learning & job creation

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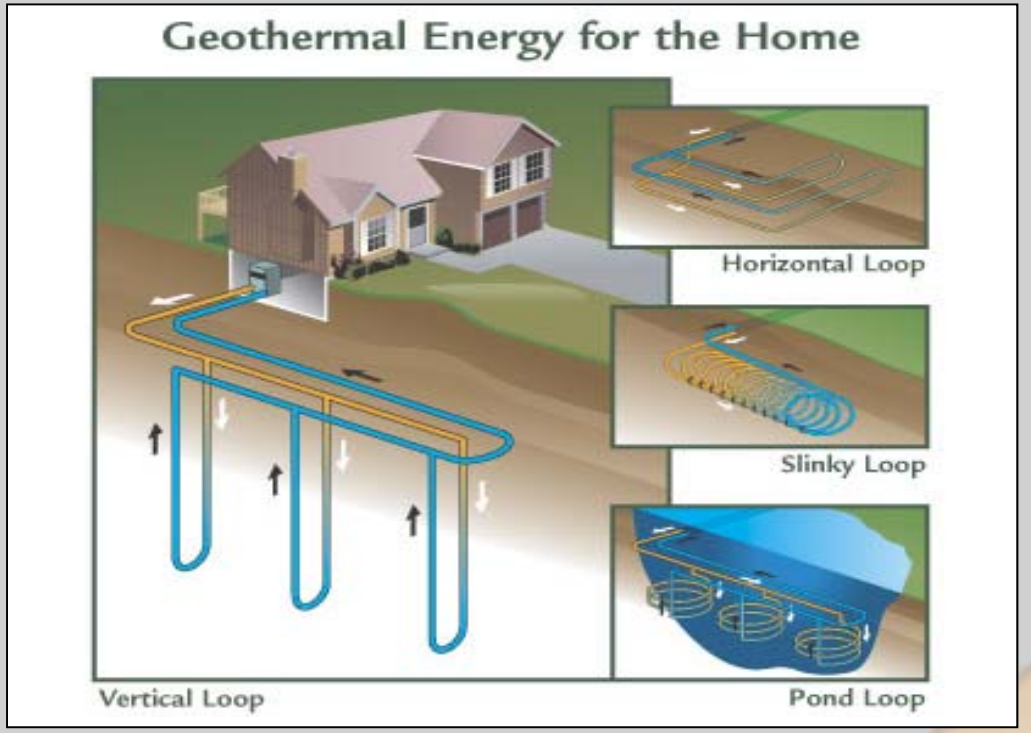
# Alternative Heating: Ground Source Heat Pump

## Ground Source Heat Pump

Ground source heating takes advantage of naturally stored energy in the ground, making it a cost-effective and environmentally friendly heating solution.Solar energy in the ground is extracted from a borehole, usually about 70m deep. Heat is extracted by cooling a fluid mixture of water and antifreeze, which is pumped around a closed-circuit ground heat exchanger. The stored solar heat is then pumped back to the surface to an electronically driven heat pump and the heat generated provides hot water for the property and for the wet heating system.




The ground source technology is much cheaper to run than electric, coal, or oil-fired heating systems. It massively reduces carbon dioxide emissions compared with any conventional heating system, while the unit lasts for about 20 years compared to 10-15 years for a normal boiler. The pipes in the ground last for about 50 years.

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# Alternative Heating: Ground Source Heat Pump

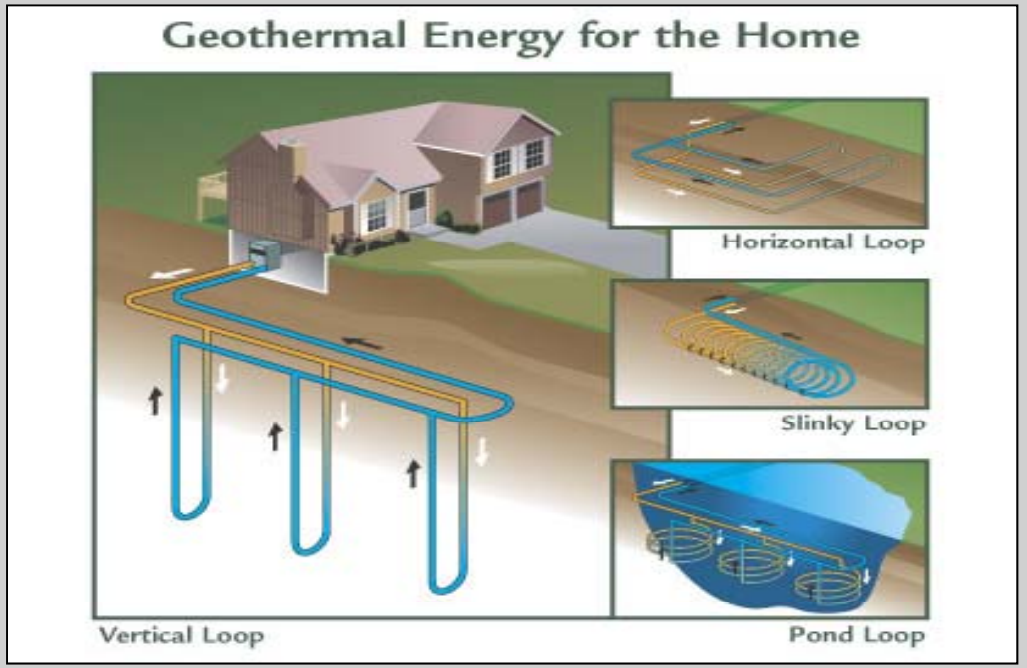
Naturally stored energy

Cost-effective and environmentally friendly

Borehole, usually about 70m deep.

Heat extracted by cooling a fluid mixture water / antifreeze, which is pumped around a closed-circuit ground heat exchanger.

Heat is pumped to surface to a heat pump, the heat generated provides hot water for the property and for the wet heating system.




Cheaper to run than electric, coal, or oil-fired heating systems

Massively reduces carbon dioxide emissions

Unit lasts for 20 years, pipes for 50 years

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# Ground Source Heating

Our initial pilot scheme of installing G.S.H. was carried out at Cuckney.

The 6 Bungalows were chosen due to:-

No mains gas supply in the village

Inadequate insulation and inefficient heating systems. 5 had storage heaters and 1 had LPG heating

All tenants were Senior Citizens (classed as vulnerable tenants)

High fuel bills

Fuel Poverty

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## Ground Source Heating

The GSH installed at Cuckney was monitored for a year and compared with previous years electric usage gathered from E-On.

**There was an overall saving of 8.63 tonnes $Co^2$**

| House No | Units 07/08 | Previous Units | Co2 07-08 | Co2 Previous | Saved Co2 + or - |
|---|---|---|---|---|---|
| 1 | 7,263 | 10,530 | 4081.806 | 5917.86 | 1836.054 |
| 2 | 7,082 | 15,908 | 3980.084 | 8940.296 | 4960.212 |
| 3 | 6,027 | 2,141 | 3387.174 | 4823.242 | 1436.068 |
| 12 | 3,979 | 9,084 | 2236.198 | 5105.208 | 2869.01 |
| 13 | 7,291 | 6,594 | 4097.542 | 3705.828 | -391.714 |
| 14 | 6,962 | 3,259 | 3912.644 | 1831.558 | -2081.09 |
| | | | | | **8628.544** |

To date we have installed 147 properties with GSHP, and in conjunction with cavity wall and loft insulation, double glazed windows, external insulation, dry lining, lower energy tariffs, energy and financial benefit advice we have been highly successful in reducing fuel poverty.

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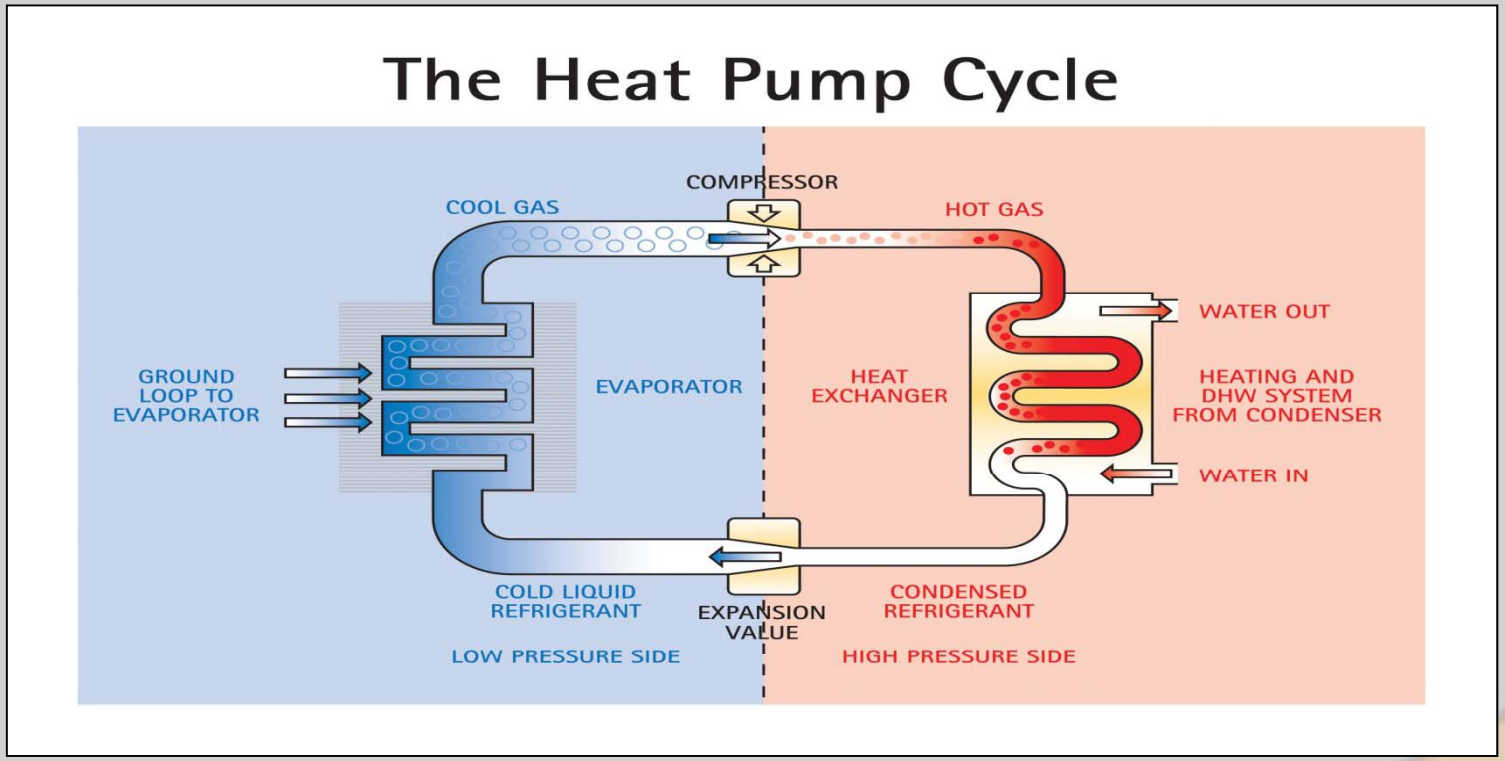
## Alternative heating Air Source Heating

### Air Source Heating




Intake air can be down to a temperature of -15 degrees and still produce heat.

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calorex RENEWABLE ENERGY

## Air Source Heating

A calorex air source heat pump was first installed in September 2007 and produced both central heating and DHW.

The properties original heat source was solid fuel.

The tenant stated they used between 2-3 bags of coal per week, this equates to between 3.5 and 4 tonnes a year

06-07- Coal + Electricity £1195.60

07-08- Electricity £892.98

An annual saving of £302.62

Reduction in CO2 produced equivalent to **5** tonnes per year.??

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## Air Source Heating

19 Calorex ASHP where installed in bungalows located in an outlying village (originally heated by oil) Benefits included:-

Lower energy bills

Reduced CO2 emissions

Reduction in the carbon footprint

Eradication of oil spillage

Lower costs to maintain

Environmentally friendly energy source

2 other ASHP where also trialled but were discontinued because of poor performance.

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## Air Source Heating

We have now moved onto Mitsubishi Eco-Dan ASHP these are more efficient and provide an enhanced inverter start system, which enables individual pumps to be started. This means there is no requirement for larger electrical upgrade supplies enabling a cost saving.  26 have now been installed.

In total we have now installed 66 ASHP

38 Calorex  2 Other  26 Mitsubishi Eco-Dan

A1 Housing are now Micro Generation Certificate Scheme (MCS) accredited installers. A1 can now install MCS accredited ASHP and get access to grants and funding. This allows A1 Housing to create inward investment and therefore expand the installation department.

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# Air Source Heating $CO^2$ Reduction

**Percentages of Energy and Carbon Dioxide Saved by Heat Pumps Supplied by Energy Saving Trust**

***Air Source Heat Pumps***

The savings below are based on a detached property, and relate to space heating only. They assume a typical system, with a seasonal performance
factor of 2.5 Figures have been rounded

| | Gas | Oil | LPG | Electricity | Coal | ASHP |
|---|---|---|---|---|---|---|
| Running Cost | £750 | £1,020 | £1,100 | £1,320 | £720 | £440 |
| % financial saving | 40% | 55% | 60% | 65% | 40% | |
| Tonnes CO2 | 3.8 | 4.3 | 4.2 | 8.9 | 8.1 | 3 |
| % CO2 saving | 20% | 30% | 30% | 65% | 60% | |

# Habblesthorpe Close, Habblesthorpe. 2 Bed Bungalows

## ASHP Monitoring Data & Cost 1st July 08-1st July 09

| No | Light, Cooking Etc | Heat Pump Usage | Total Consumption | % Heating, DHW | Cost of Heating | % Lighting Cooking | Cost of Lighting Cooking | Total Cost Inc VAT | Cost of Heating DHW/day |
|---|---|---|---|---|---|---|---|---|---|
| **1** | 2101 | 5414 | 7515 | 72 | £639.06 | 28 | £248.00 | £887.06 | £1.75 |
| **2** | 3100 | 3510 | 6610 | 53 | £420.34 | 47 | £371.24 | £791.59 | £1.15 |
| **3** | 3634 | 2865 | 6499 | 44 | £343.80 | 56 | £436.08 | £779.87 | £0.94 |
| **4** | 1717 | 5513 | 7230 | 76 | £653.47 | 24 | £203.52 | £857.00 | £1.79 |
| **5** | 2570 | 4948 | 7518 | 66 | £584.03 | 34 | £303.35 | £887.38 | £1.60 |
| **6** | 3831 | 4951 | 8782 | 56 | £575.45 | 44 | £445.28 | £1,020.73 | £1.58 |
| **7** | 1772 | 4043 | 5815 | 70 | £492.05 | 30 | £215.66 | £707.71 | £1.35 |
| **8** | 2582 | 4196 | 6778 | 62 | £501.01 | 38 | £308.30 | £809.31 | £1.37 |
| **9** | 6057 | 4051 | 10108 | 40 | £465.15 | 60 | £695.48 | £1,160.62 | £1.27 |
| **11** | 2762 | 4704 | 7466 | 63 | £555.64 | 37 | £326.25 | £881.89 | £1.52 |
| **12** | 6115 | 4384 | 10499 | 42 | £501.86 | 58 | £700.02 | £1,201.87 | £1.37 |
| **13** | 5290 | 3203 | 8493 | 38 | £373.45 | 62 | £616.79 | £990.24 | £1.02 |
| **14** | 1255 | 2942 | 4197 | 70 | £376.43 | 30 | £160.58 | £537.01 | £1.03 |
| **15** | 2706 | 3797 | 6503 | 58 | £455.60 | 42 | £324.69 | £780.30 | £1.25 |
| **18** | 3833 | 2952 | 6785 | 44 | £352.43 | 56 | £457.61 | £810.05 | £0.97 |
| **22** | 4389 | 3506 | 7895 | 44 | £411.73 | 56 | £515.42 | £927.15 | £1.13 |
| **23** | 1756 | 3936 | 5692 | 69 | £480.41 | 31 | £214.33 | £694.74 | £1.32 |
| **Averages** | **3263** | **4054** | **7317** | **57** | **£481.29** | **43** | **£384.86** | **£866.15** | **£1.32** |

Costs based on Standard Eon Tariff (Pay Quarterly)

# Air Source Heat Pump Running Costs

The information below is an example of the electricity consumption and running costs for an average household that has been fitted with a Calorex Air Source Heat Pump over a period of two years.

Please note: This information is only an indication of what it could cost to heat your home. All running costs are subject to the way the household is heated, for how long and to what temperature.

These figures are for the total electricity consumed by the household including heating, hot water, lighting, cooking, television and other electrical items.

| | kW/h | Prepayment meter | Cost with standard tariff pay quarterly* | Cost with best monthly Direct Debit** |
|---|---|---|---|---|
| 2 Bed Bungalow | 7317 | £966.24 | £898.65 | £645.05 |
| 3 Bed Semi Det House | 9767 | £1,258.23 | £1,189.10 | £829.32 |

Based on current prices as of August 6, 2010
*E-ON standard tariff paid on receipt of bill.
**EDF Energy Online Saver 8 paid by fixed rate Direct Debit

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## Working Partnership

E-on – full design package.

Bullock Construction Ltd – local sub contractors

Connaught Partnerships – local sub contractors

## Grant Funding

Funding of £500k has been obtained from Carbon Emission Reduction Target (CERT) funding and the Low Carbon Building Programme. (LCBP).
Community Energy Saving Programme (CESP)

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## Eradicating Fuel Poverty, Benefits to Our Customers

LOWER FUEL BILLS

INCREASED SPENDING POWER

WARMER & SAFER HOMES

IMPROVED LIVING CONDITIONS

IMPROVED SELF ESTEEM

IMPROVED HEALTH

IMPROVED FAMILY LIFE

SUSTAINABLE COMMUNITIES

IMPROVED QUALITY OF LIFE

REDUCTION OF ACCIDENTS

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## Environmental Wins

Investing heavily in renewable energy has improved the average SAP rating for our housing stock from 62.20 in 2007 to 72.75 March 2010.

The average Co2 emissions output has also decreased from 4.62 in 2007 to 3.87 tonnes per property.

Reduction in using Fossil fuels

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## Our Energy Strategy

Our strategy is an example of our commitment to tackling fuel poverty which will enable sustainable development:, creating jobs and business opportunities and tackling climate change."

•Social – reduce the impact of fuel poverty on householders in Bassetlaw

•Economic – create green jobs and business opportunities for local people.

•Environmental – reduce greenhouse gas emissions and fulfil our commitment to provide renewable energy to 20% of our housing stock by 2020."

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# QUESTION TIME